UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,180	03/25/2004	Navdhish Gupta	1054.028	6823

22186   7590   12/19/2006
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EXAMINER
CHOI, WOO H

ART UNIT	PAPER NUMBER
2189	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/809,180	GUPTA ET AL.
	Examiner	Art Unit	
	Woo H. Choi	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 September 2006</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-30</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,3-11 and 13-30</u> is/are rejected.

7) ☒ Claim(s) <u>2 and 12</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some * c) ☐ None of:

         1. ☐ Certified copies of the priority documents have been received.

         2. ☐ Certified copies of the priority documents have been received in Application No. _____.

         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1, 3 – 11 and 13 – 26, 28 – 33 are rejected under 35 U.S.C. 102(e) as being

anticipate by Li et al. (US Patent Application Publication No. 2005/0122982, hereinafter "Li").

3.   With respect to claims 1, 11, 21 and 22, Li discloses a scheduler (figure 2 and page 2,

paragraph 14) for a plurality of packet storage devices, the scheduler comprising:

        a memory device (202) adapted to store a look-up table (LUT) that maps an input address

to a LUT output, wherein:

        the input address (224, empty flags are used to select which queue number to output)

corresponds to current status of one or more of the packet storage devices; and

        the LUT output (figure 3, 310 or 314) identifies a next packet storage device to select for

service and whether the next packet storage device has data available for service;

        a latch (308, 358, etc.) adapted to store and forward the LUT output; and

        an extractor adapted to receive the forwarded LUT output from the latch and to generate

(1) a latch enable (LE) control signal (306) that enables the latch to forward the LUT output and

(2) a read enable (RE) control signal (315, alternative 314) that identifies which one or more

packet storage devices are to be serviced.

4.   With respect to claims 3 and 14, the extractor can be said to be in EXTRACT state when

it is extracting data from the selected queue and is in IDLE state when it is not extracting. The

clock signal 306 (LE control signal), which enable the latch to forward the LUT output, seems to

be generated regularly regardless of what state the extractor is in including under states and

conditions recited in the limitations (i.e., 306 is generated when the queues are empty and also

when the queues are full and being serviced).

5.   With respect to claims 4 and 14, by the definition of the states discussed above, state

transition from IDLE to EXTRACT occurs when data become available and is being extracted

and vice versa.

6.   With respect to claims 5 and 15, see figure 2, 224, figure 3, 318 – 322 and paragraph 18.

7.   With respect to claims 6 and 16, the packet storage device has data available when it is

not empty, i.e., has one or more (non-zero threshold number of packets).

8.   With respect to claims 7, 8, 17 and 18, Li discloses, in page 2 paragraph 15, that once

data has been sent out, the table is rotated. This requires indication of completion of service.

9.   With respect to claims 9, 10, 19 and 20, the scheduling algorithm can be changed by

populating the rotating table as desired.   See page 2, paragraph 14.

10.   With respect to claim 21, Li discloses a scheduler for a plurality of packet storage devices

(figure 1, 148,146, 144), wherein the scheduler comprises a look-up table (LUT) (120) that

identifies a next packet storage device to select for service based on current status (114, 116,

118) of one or more of the packet storage devices.

11.   With respect to claim 22, the scheduler further comprising:

        a latch adapted to store and forward the identification of the next packet storage device to

select for service (104 is adapted to store the number, that corresponds to the next queue to be

selected, that is forwarded to 120) based on a latch enable (LE) control signal (102, 114 – 118);

and

        a finite state machine (FSM) (figure 1) adapted to (1) forward the identification of the

next packet storage device to the plurality of packet storage devices and (2) generate the LE

control signal, based on service status information from the packet storage devices.

12.   With respect to claim 27, the current status of the one or more packet storage devices

comprises an indication of whether each packet storage device has data available for service and

an indication of which packet storage device is currently selected for service (page 1, paragraph

5).

13.   With respect to claim 28, a packet storage device has data available for service when the packet storage device currently stores more than a specified threshold number of data packets (paragraph 5, a queue has data available when it is not empty).

14.   With respect to claims 29 and 30, an existing LUT can be replaced with a new LUT in order to change a scheduling algorithm for the packet storage devices (look-up table is some thing that can be changed and changing the table content would alter the scheduling sequence/algorithm).

15.   With respect to claims 23 – 26, see rejections of claims 3 – 8 above.

16.   With respect to claims 31 – 33, the read enable control signal is adopted to simultaneously identify that two or more packet storage devices are to be serviced (page 3, paragraph 21, signal 415 identifies each of the multiple packet devices with contents that need to be serviced with the output 410 of the AND gate determining which one should be serviced next, i.e., sequencing of service).

Allowable Subject Matter

16.   Claims 2 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

17.   Applicant's arguments filed September 28, 2006 have been fully considered but they are

not persuasive.

Claims 1 and 11

        With respect to Applicant's argument regarding claims 1 and 11, Applicant seems to be

arguing that the claimed memory device, the latch, and the extractor, must be distinct and

separate components that do not share any common elements. However, claims do not require

this. In fact, the claims do not even require that the "memory device" actually store anything. It

merely requires that the claimed "memory device" be **adapted** to store a LUT. Li's memory

device 202 is adapted to store a LUT. Li's scheduler also contains a latch as shown in the

rejection above. There's nothing in the claim language that precludes the latch from being inside

the storage device.

        As to Applicant's argument regarding the claimed "extractor", Li's scheduler has

circuitry that is **adapted** to receive the forwarded LUT output from the latch and to generate

clock signal that enables the latch to forward the LUT output. Li's scheduler also generates a

signal that identifies which one of the packet devices is to be served as discussed above. Again,

the claim language does not require that the claimed "extractor" be external to the claimed

storage device. Sum of all circuits in Li's scheduler that is adapted to receive the forwarded

LUT output (multiplexers and buses shown in figure 3, for example) from the latch and that

generates a signal (clock signal generator) that enables the latch to forward the LUT output (LUT

output is not enabled without the clock signal) and generate a signal that identifies which one or

more packet storage devices are to be serve (as Applicant admitted, output of the mux 312 identifies which queue to select for data output) collectively reads on the claimed extractor.

Applicant further argues that the claimed LUT output identifies a next packet storage device to select for service and whether the next packet storage has data available for service but Li's signal does not identify whether the next packet storage device has data available for service. The Examiner does not agree with Applicant that Li does not teach identifying whether the next packet storage has data available for service. As Applicant admitted, Li's signal 314 identifies the next packet storage device to select for service. This selection identifies that there is data available for service in Li's invention, because in Li's invention empty queues are bypassed when selecting the next queue to be served (see page 2, paragraph 15).

Claims 3, 13, 22, and 23

A digital device such as Li's scheduler, or a portion of the device, is a finite state machine because, unlike analog circuits, a digital circuit can only be in a finite number of states. When Li's machine is in a state where it is not extracting data (IDLE state) and at least one queue has data available for storage, the machine transitions into a state where the next data can be extracted (EXTRACT state).

Claims 5, 15, and 21

See paragraph 18 of Li's disclosure.

Claims 6, 16, and 28

When a queue is not empty it has one or more (non-zero) packets to be serviced.

Claims 7, 17, and 25

As discussed above, Li's device contains circuits associated with extracting "packets."

As explained in the rejection, indication of completion of service is required for the device to function properly. Applicant has failed to show that Li's device does not have circuits associated with extracting packets and that an indication of completion of service is not required or the extracting circuits to function properly.

Conclusion

17.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Woo H. Choi
December 8, 2006